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CURRENT LITERATURE  
IN  
AGRICULTURAL ENGINEERING

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APR 1938

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF AGRICULTURAL ENGINEERING

Vol. 7, No. 8.

WASHINGTON, D.C.

March, 1938

Agriculture.

Century of adjustments in a New Hampshire back area. By H.C. Woodworth. Agricultural History. v.11, no.3. July, 1937. p.223-237. Paper undertakes to present study of back country area in which agriculture has declined for many years until it has now almost disappeared. First section briefly relates to adjustments from 1800 to date, middle part to description or present conditions, and last to certain aspects of future adjustments.

Forty-seventh annual report, January 1 to December 31, 1936 of the Agricultural experiment station of the Alabama polytechnic institute. Auburn, Ala., 1937. 30p. Study of the relationship of the dynamic properties of soil to the elements of tillage implement design, p.9-10.

Historical approach to the economic problems of agriculture. By H.C. Taylor. Agricultural History. v.11, no.3. July, 1937. p.221-223.

Michigan agricultural outlook for 1938; index of prices received and prices paid by farmers in Michigan, by months, 1926-37. East Lansing, Michigan, 1938. 18p. Michigan state college. Extension division. Agricultural economic news for Michigan. no.16.

Report of progress for year ending June 30, 1937. Maine agricultural experiment station. Orono, Maine, 1937. 262p. University of Maine. Agricultural experiment station. Bulletin no.387.

Forty ninth annual report, 1936. College station, Texas. Agricultural and mechanical college of Texas. Agricultural experiment station, 1937. 346p.

Air Conditioning.

Modern air conditioning with ice. By E.L. Garfield. Ice & Refrigeration. v.94, no.3. March, 1938. p.199-201. Advantages and characteristics of ice as a cooling medium in air conditioning systems. Its use in central plants. Many bigger jobs can use ice advantageously.

New tables of psychrometric properties of air-vapor mixtures. By William Goodman. Heating, Piping and Air Conditioning. v.10, no.2. February, 1938. p.119-122. Purpose of text not only to describe use of tables and how they were computed, but also to describe method of computing heat to be removed when cooling and dehumidifying air.



Agriculture. (Cont'd)

✓ Performance tests of asbestos insulating air duct. By R.H. Heilman and R.A. MacArthur. Heating, Piping and Air Conditioning. v.10, no.2. February, 1938. p.127-133. Data are presented briefly to indicate suitability of asbestos for fabrication of air conditioning ducts of satisfactory engineering characteristics. Friction losses, acoustic characteristics, and thermal data are presented and discussed.

Alcohol Fuel.

Distillate as a tractor fuel. By E.L. Barger and J.L. Gale. Agricultural Engineering. v.19, no. 2. February, 1938. p.67-71.

Building Construction.

✓ Laminated rafters for farm buildings. By H.H. Musselman. Quarterly Bulletin, Michigan Agricultural Experiment Station. v.20, no.3. February, 1938. p.163-169. Provide clear storage space and may be reinforced with cable to prevent sagging.

Latest research findings incorporated in prefabricated plywood house. By R.F. Luxford. American Lumberman. v.63, no.3114. December 4, 1937. p.40-42.

Central Valley Water Project.

Central Valley project of California. By Walker R. Young. Reclamation Era. v.28, no.2. February, 1938. p.22-25.

Climate.

Bioclimatics; a science of life and climate relations. By Andrew Delmar Hopkins. Washington, U.S. Govt. print. off., 1938. 188p. U.S. Department of agriculture. Miscellaneous publication no.280.

Conservation.

Economic implications of a soil and water conservation program. By Walter J. Roth and Alexis N. Garin. Soil Conservation. v.3, no.8. February, 1938. p.223-225.

How conservation began in the United States. By Gifford Pinchot. Agricultural History. v.11, no.4. October, 1937. p.255-265.

Soil and water conservation investigations; progress report, 1931-36. Contribution from Section of Soil and water conservation service and Texas agricultural experiment station cooperating in research. Washington, D.C., U.S. Department of agriculture. Soil conservation, 1938. 35p. Mimeographed.



Cotton.

"De Lawd smiled - and de white folks wept." By James E. Edmonds.  
Country Gentleman. v.107, no.12. December, 1937. p.7-8, 87.  
Discussion of the cotton situation.

Cotton Machinery.

Centrifugal gin. Arizona Producer. v.16, no.22. February 1,  
1938. p.10. Inventor claims it works better, faster than saw or  
roller gins. Patented by Frank E. Watson, of Jonesboro, Ark.,  
and Westbury, Conn.

Effects of feeds and saw speeds on cotton turn-out and quality.  
Charles A. Bennett and Francis L. Gerdes. Cotton Ginners' Journal.  
v.9, no.5. February, 1938. p.7, 16.

Improved ginning methods. International Cotton Bulletin. v.16, no.62.  
January, 1938. p.225-226. At Mississippi State Fair. Exhibit,  
first of its kind ever known at the State Fair, included two approved  
type cotton driers as developed by Federal Cotton Ginning Laboratory  
at Stoneville, model gin in operation, and cotton samples of many  
kinds. Working model of commercially built vertical government type  
drier, constructed according to specifications of Federal Cotton  
Ginning Laboratory at Stoneville, was in operation. Government  
model drier with complete installation showing how cotton travels  
from wagon through drier and to gin stands was shown. Value of sharp  
saws and proper adjustment of seed roll was demonstrated.

Dams.

Dakota's dams imprison valuable runoff. Dakota-Farmer. v.58, no.2.  
January 15, 1938. p.22-23. Water held back by more than 2,000  
dams.

Diesel Engines.

Appraisal and abstract of available literature on diesel engine occupa-  
tions. By Robert Hoppock and Samuel Spiegler. New York. National  
occupational conference, 1937. 10p.

Drainage.

Land drainage: some remedial works in the river Trent catchment area.  
Journal of the Ministry of Agriculture. v.44, no.10. January,  
1938. p.966-969.

Ready for a rainy day. Successful Farming. v.36, no.3. March,  
1938. p.12-13.

Electric Wiring.

Cost of safety in wiring. By L.W. Going. Quarterly of the National  
Fire Protection Association. v.31, no.3. January, 1938. p.198-201.



### Electricity-Distribution.

Rural electrification: development of Dumfries rural area. By J.S. Pickles. Rural Electrification and Electro-farming. v.13, no.152. January, 1938. p.127-133.

Wood pole construction. By J.C. Costello. Electrical Review. v.122, no.3139. January 21, 1938. p.87-88. Its application to high-voltage rural distribution.

### Electricity in the Home.

Domestic electric appliances in 1937. Edison Electric Institute Bulletin. v.6, no.2. February, 1938. p.46. Domestic electric appliances: Kilowatt-hours used by various appliances in domestic electric service since 1920.

### Electricity on the Farm.

Advantageous use of electricity on the farm. By Andrew Hustrulid. St. Paul, Minn., 1938. 1p. University of Minnesota. Agricultural extension division. Agricultural engineering news letter no.71.

Electric pig brooders. By J.R. Tavernetti and E.H. Hughes. Berkeley, California, 1937. 8p. University of California. Agricultural experiment station. Bulletin 618.

Sunshine at night. By Frank J.G. Duck. Electricity on the Farm. v.11, no.2. February, 1938. p.12-13, 32-33. Ultra-violet lamps help to increase profits in the poultry business.

We have found out how to live. By Joseph Kerkhoff. Electricity on the Farm. v.11, no.2. February, 1938. p.7-9.

### Erosion Control.

Publications on soil conservation and related subjects. Washington, D.C., U.S. Department of Agriculture. Soil conservation service, 1938. 5p. Mimeographed.

Studies of beach erosion. By Earl I. Brown. Engineering News-Record. v.120, no.8. February 24, 1938. p.299-302. Satisfactory results in small wave tank leads to construction of larger tank for more elaborate studies of destructive effect of wave action.

### Explosives.

Explosives. By Gordon Mitchell. The Bulletin. Hydro-Electricity Power Commission of Ontario. v.25, no.1. January, 1938. p.6-16.

### Farm Buildings.

Better farm buildings. By William Boss. Hoard's Dairyman. v.82, no.23. December 10, 1937. p.657.



Farm Buildings. (Cont'd)

Building a hog house. By Ralph W. Poulton. Breeder's Gazette.  
v.103, no.1. January, 1938. p.20-21.

Farmers will be interested when they see these plans. Lumber &  
Building Material Dealer. v.7, no.1. January, 1938. p.12-13.

Lightweight brooder house. Iowa Agriculturist. v.38, no.8.  
February, 1938. p.18. Special features of plywood which makes it  
important building material are: (1) Large size panels, which are  
easier to handle than boards and make fewer cracks, thus reducing  
wind infiltration; (2) strength and rigidity, both lengthwise and  
crosswise, because no matter which way one tries to bend it there  
is a strong end grain to oppose stress; (3) practically no shrink-  
age or expansion, because of tendencies of different layers to  
expand or contract in different directions at same time; (4) minimum  
of warping, also due to cross grain held by glue; and (5) non-splitting.

State-wide farm building program. By Deane G. Carter. Agricultural  
Engineering. v.19, no.2. February, 1938. p.59-60. Conclusion:  
Projection of farm and home building program on state-wide basis  
requires careful preparation to assure ample publicity, illustrative  
materials, dealer cooperation, suitable plans, and preparatory con-  
ferences to enlist full support of agencies who will participate.  
Program is far broader than technical architecture or agricultural  
engineering in its responsibilities.

Toward better farm buildings. By W.G. Kaiser and G.B. Hanson.  
Lumber and Building Material Dealer. v.7, no.1. January, 1938.  
p.2-3.

Farm Labor.

Distribution and seasonality of agricultural employment. By Julius  
T. Wendzel. Agricultural Situation. v.22, no.2. February 1,  
1938. p.13-16. Article is effort to analyze these distributions  
based upon census data and the monthly reports of the Bureau of  
Agricultural Economics of seasonal changes in employment on the  
farms of crop reporters.

Farm Machinery and Equipment.

Agricultural machinery topics. By S.J. Wright. Journal of the  
Ministry of Agriculture. v.44, no.10. January, 1938. p.987-991.  
Tractor power in ploughing. Lime and chalk grinding. Implements at  
Smithfield.

Animal ploughs for varied overseas service. Implement & Machinery  
Review. v.63, no. 754. February 1, 1938. p.972-974.

Better machines and better factories. Engineering Experiment Station  
News - Ohio State University. v.10, no.1. February, 1938. p.6-7.



Farm Machinery and Equipment. (Cont'd)

Construction of agricultural machinery with light materials. By H.J. Hopfen. Monthly Bulletin of Agricultural Science and Practice. v.29, no.1. January, 1938. p.18T-21T.

Equine to engine. By Samuel R. Guard. Country Home Magazine. v.62, no.1. January, 1938. p.7-9.

Essentials of a sugar beet harvester. February 1, 1938. p.969. Implement & Machinery Review. v.63, no.754. Special steps are being taken in Germany, by Wirtschaftsgruppe Zuckerindustrie (representing the sugar beet industry) and Reichskuratorium für Technik in der Landwirtschaft (technical engineering institute), for development of sugar beet harvester. Scheme is being promoted on ambitious lines. It is sought to incorporate in it all interested parties, including those concerned with national agricultural policy, and contributions to solution of problem are invited from firms or individuals who can in any way make proposals or offer plans to advance technical developments beyond the stage they have reached today. It is laid down that minimum requirements for sugar beet harvester are (1) topping roots; (2) lifting them; (3) separate delivery of tops and roots, and furthermore, tops and roots must be so delivered aside that they do not interfere with, or are in no danger from the machine on next bout. Topping and lifting can be executed simultaneously or in two operations.

Farm Machinery Outlook??? By H.D. Walker. Implement Record. v.35, no.2. February, 1938. p.19-20, 52.

Forward with mechanization. By Sydney G. McAllister. Implement & Tractor. v.53, no.4. February 19, 1938. p.15, 30, 32.

A guide to tractor power. Implement and Machinery Review. v.63, no.754. February 1, 1938. p.969.

Harvester engineer awarded medal. By Ralph McQuinn. Tractor Farming. v.23, nos. 1 and 2. January-February, 1938. p.3-4.

Harvesting vetch with baby combines. Implement Record. v.35, no.2. February, 1938. p.18.

How farm equipment serves agriculture. By Sydney G. McAllister. Better Farm Equipment and Methods. v.10, no.6. February, 1938. p.4-5.

Implement requirements for contouring. By Paul C. McGrew. Implement Record. v.35, no.2. February, 1938. p.22.

Look! Think! Then use the wrench, if advisable. By G.W. McCuen and E.A. Silver. Farm Implement News. v.59, no.4. February 24, 1938. p.27-29. Comments on the combine tests in Ohio in 1936 and 1937. What they disclosed and what they suggest.



Farm Machinery and Equipment. (Cont'd)

Mechanical pickers harvesting Iowa's corn. Grain & Feed Journals. v. 79, no. 10. November 24, 1937. p.449. Mechanical pickers have replaced half itinerant labor formerly employed in picking Iowa's tremendous corn crop, relieving farmers from some labor and harvest uncertainties, but multiplying price hazards that follow overloaded market. Mechanical pickers have put current corn crop on market much more rapidly, and at earlier date than heretofore. Murray survey shows that southern Iowa counties still employ hand labor, but farther north one moves the greater is production of corn being picked by machines. Thus, while only 1 percent of corn in Ringgold county on Missouri border, and nearby Decatur, Appanoose and Monroe counties, is being harvested with mechanical pickers, volume being harvested mechanically runs up to 70 per cent in O'Brien, Cerro Gordo and Calhoun counties, to 75 per cent in Wright.

New life for farm machinery. By William F. Schuyler. Farm Journal. v. 62, no. 3. March, 1938. p. 17, 78.

New sugar beet harvester with novel features. Implement & Machinery Review. v.63, no.754. February 1, 1938. p.975.

New trash plow. By N.J. King. Facts About Sugar. v.32, no.12. December, 1937. p.482. Abstract from article in Cane growers' quarterly bulletin. v.2, p.69-71.

Porterville grower invents potato digger. Implement Record. v.35, no.2. February, 1938. p.21.

Previews of 1938's farm machinery in which the newest time- and labor-savers are paraded before America's keenest judgment, her practicing dirt farmers. Successful Farming. v.36, no.2. February, 1938. p.10-11.

Production and sales of tractors, combines and threshers in 1937 with comparisons. Farm Implement News. v.59, no.3. February 10, 1938. p.22. Preliminary Report of Bureau of Census.

Sugar beet harvesters. By C. Culpin. Implement and Machinery Review. v.63, no.754. February 1, 1938. p.970-971.

Farm Mechanics.

Farm shop units. By L.B. Callison. Better Farm Equipment and Methods. v.10, no.7. March, 1938. p.12, 14.

Feed Grinders and Grinding.

Feed grinding, mixing and elevating. By H.N. Colby. Pullman, Washington, 1937. 28p. State college of Washington. Agricultural experiment station. Popular bulletin no.151.



### Fences.

Good fences improve farm loans. Better Farm Equipment and Methods.  
v.10, no.6. February, 1938. p.8-9.

### Fire Protection.

Fire protection and prevention for summer homes in forested areas.  
Prepared by the Forest committee of the National fire protection  
association, 1935. 16p.

Menace of the wooden shingle. Boston, Mass. National fire protec-  
tion association, n.d. 19p.

National fire codes for flammable liquids and gases. Compiled by R.S.  
Moulton. Boston, Mass., National fire protection association,  
1938. 360p.

Spontaneous ignition of chopped hay. By H.E. Roethe, M.A. Bradshaw  
and E.J. Hoffman. Boston, Mass., National fire protection associa-  
tion, 1935. 10p. Reprint from Quarterly, July, 1935.

These things lead to fire. Successful Farming. v.36, no.3.  
March, 1938. p.19.

### Fireplaces.

For comfort - and convenience. By Arthur H. Senner. Domestic Engi-  
neering. v.151, no.1. January, 1938. p.66-68, 147-151. Tests  
made on performance of fireplaces in home reveal operating efficiencies.

### Floods and Flood Control.

Bonnet Carre Spillway in the flood of 1937. By William F. Tompkins.  
Military Engineer. v.30, no.169. January-February, 1938. p.43-47.

Floods of March, 1936. Part 2. Hudson river to Susquehanna river  
region. Nathan C. Grover, chief hydraulic engineer. Washington,  
U.S. Govt. print. off., 1937. 380p. U.S. Department of the Interior.  
Geological survey water-supply paper 799. Multigraphed.

Relation of sedimentation studies to a flood-control program. By G.C.  
Dobson. Soil Conservation. v.3, no.8. February, 1938. p.219-  
222.

Wild Western Rivers. By John C. Page. Reclamation Era. v.28, no.2.  
February, 1938. p.33.

### Flow of Water and Gases.

Manner of liquid flow through pipe-line orifice. By O.L. Kowalke.  
Industrial & Engineering Chemistry. v.30, no.2. February, 1938.  
p.216-222.



### Frost Protection.

Orchard heating field laboratory. California Cultivator. v.84, no.25. December 4, 1937. p.817. Orchard heating methods and heaters will be studied. Acre plot will be used in heating trials, with plots of similar size as check areas for comparison of results.

Some details of frost protection. By D.J. Whitney. California Cultivator. v.84, no.25. December 4, 1937. p.809, 833.

### Fuels.

Report of volunteer group for compression-ignition fuel research. C.H. Baxley and T.B. Rendel. S.A.E. Journal. v.42, no.1. January, 1938. p.27-36. Results of second series of cooperative tests are given, using procedure adopted in Group's last report together with series of tests on same fuel using critical compression ratio method with interval timing-control device. Tests on three alternative methods based on delay method, but using different instruments for recording delay, are given. Results on two different full-scale engines are also presented. It is concluded from results of the past 18 months' work that direct matching method on basis of ignition delay is best from point of view of reproducibility and validity, even though this method will involve some sacrifice in simplicity and speed of testing. Progress of methods of instrumentation is advanced considerably, and it appears that bouncing-pin type should be discarded in favor of balanced diaphragm or magnetic-pickup type.

### Grinding Machines.

Developments in grinding. By Lincoln T. Work. Industrial & Engineering Chemistry. v.30, no.2. February, 1938. p.130-135. Recent developments in crushing and pulverizing mill construction are reviewed critically, and description of the more distinctive new mills is presented. Normal improvements of standard mill types have consisted in utilization of newer materials of construction and in varying combinations of drives, feeders, mills, classifiers, and collectors. Problems of reducing energy consumption by more effective use of grinding forces, of lowering maintenance charges by minimizing wear on costly parts, and of classifying materials to obtain desired size reduction well into subsieve sizes by control in design and operation, continue as dominant factors in development of new types of mills. Adjuncts to milling process include pre-conditioning of material for grindability, use of addition agents to avoid mill packing and to give desired qualities to product, and use of flotation in connection with grinding and classification of nonmetallic ores.

### Hay Drying.

Hay drying is surveyed. By W.M. Hurst. Grain & Feed Journals. v.79, no.10. November 24, 1937. p.451.

### Heating.

Radiant heating makes high room temperature unnecessary. Science News Letter. v.33, no.8. February 19, 1938. p.127. People found to be comfortable in cold rooms when radiating wall panels prevented losses of body heat.

### Hotbeds.

Electricity aids in hitting high-priced markets. Better Farm Equipment and Methods. v.10, no.6. February, 1938. p.10, 12. Construction of a typical electric hotbed, with diagram of complete installation of soil-heating set.

Hotbeds and coldframes. By R.A. Schroeder, T.J. Talbert and J.W.C. Andersen. Columbia, Missouri, 1938. 4p. University of Missouri. Agricultural extension service. Circular 376.

### Houses, Remodeling

Remodeling possibilities for farm houses. By H.E. Wichers. Agricultural Engineering. v.19, no.2. February, 1938. p.72.

### Hydrology.

Hydrologic investigations on selected watersheds. By C.E. Ramser. Soil Conservation. v.3, no.8. February, 1938. p.215-218.

### Insect Control.

Electrical control of insect pests. By L.T. Jones. California Cultivator. v.85, no.4. February 12, 1938. p.98-99, 127.

### Insulation.

Houses protected against winter by cellulose film. Science News Letter. v.33, no.5. January 29, 1938. p.70. Transparent covering may be applied over windows, storm sash, or specially built frames; cost is low.

Lightweight insulating hollow tile wall shows good fire resistance. Brick & Clay Record. v.92, no.2. February, 1938. p.46.

### Irrigation.

Capturing water in the desert. By R.O.C. Thompson. Engineering News-Record. v.120, no.9. March 3, 1938. p.327-329. Across the barren semi-arid regions of India, irrigation water is made to flow by tapping underground storage basins.

Fighting drouth with irrigation. By Wm. Terpstra. Market Growers Journal. v.62, no.2. January 15, 1938. p.35, 37-38.



### Irrigation. (Cont'd)

Pump irrigation. By I.D. Wood. Lincoln, Nebraska, 1937. Nebraska agricultural college. Cooperative extension work in agriculture and home economics. Extension circular 754 revised. Mimeographed.

### Land Utilization.

Re-planning Missouri farms. By Donald B. Ibach. Columbia, Missouri, 1938. 32p. University of Missouri. Agricultural extension service. Circular 375.

### Lighting.

Farm lighting. By K.B. Huff. Columbia, Missouri, 1938. 14p. University of Missouri. Agricultural extension service. Circular 374.

Lighting the farm home. By Anne Biebricher and I.P. Blauser. Columbus, Ohio, 1938. 28p. Ohio state university. Agricultural extension service. Bulletin 192.

### Lubrication.

Hypoid lubricants - test results and their interpretation. By C.E. Zwahl. S.A.E. Journal. v.41, no.6. December, 1937. p.555-565. Detailed report of results obtained testing hypoid lubricants at Chevrolet Motor Company. Nine different characteristics are checked in laboratory tests; load-carrying properties; viscosity; chemical analysis to determine total lead, sulphur and chlorine; oxidation; evaporation loss; non-combustible sediment; channeling; forming; and copper-strip test. Scoring tests were conducted over 3.8-mile speed loop in proving ground at speeds varying from 10 to 70 m.p.h., and new third member was used for each test of each lubricant. If lubricant prevents scoring in two tests and was free from certain undesirable characteristics as determined in laboratory, it was considered satisfactory. Hypoid lubricants that failed to pass tests are analyzed. Durability tests on various hypoid lubricants covering mileages up to 40,000 are described.

### Milk Transportation.

Warming of milk in transit. By John E. Nicholas. Agricultural Engineering. v.19, no.2. February, 1938. p.61-62. Table 1. Rise in average temperatures of a can of milk and a can of water during exposure to the outside air and in the sun. Table 2. Comparative rise in the average temperatures of jacket covered and fully exposed cans in transit measured in half-hour intervals.

### Milking Machines.

Mechanical milkmaid. Hoard's Dairyman. v.82, no.22. November 25, 1937. p.625.

### Motor Fuel.

Fuel research pays dividends. By Arch L. Foster. National Petroleum News. v.30, no.3. January 19, 1938. p.21. Benefits are already resulting from cooperative motor fuel testing program of oil and automotive industries.

Gasoline-alcohol blends in internal combustion engines. By L.C. Lichty and C.W. Phelps. Industrial and Engineering Chemistry. v.30, no.2. February, 1938. p.222-230.

### Plants, Effect of Light on

Electric light stimulates growth of plants. Rural Electrification News. v.3, no.6. February, 1938. p.9-10.

### Power Development.

Cost of energy generation. Civil Engineering. v.8, no.2. March, 1938. p.175-180. Analyzes cost of steam, Diesel, and hydro power, and combinations thereof, at switchboard. Only incidentally concerned with transmission and distribution costs; however, it is stressed that these elements may well be predominant ones in cost of power to consumer. Fallacy of universal "yard-stick" for power costs is emphasized. "Depreciation" comes in for more scientific treatment than is usually accorded it.

### Public Works.

Advantages of a Federal Department. By George W. Burpee. Civil Engineering. v.8, no.3. March, 1938. p.159-162. Advantages to be expected from such department include logical development of increasingly great problem, simplification of processes of carrying on work, better control of funds and more direct responsibility for their application, improved economy, and development of better public service.

History of the movement. By A.J. Hammond. Civil Engineering. v.8, no.3. March, 1938. p.155-159. Traces history of movement for Federal Department of Public Works from first conference of engineering societies on subject, held in 1885, to recommendations and reports of government officials during past year.

Report on progress of the Works program, December, 1937. Washington. Works progress administration, 1938. 112p.

Some factors bearing on the proposal. By Donald H. Sawyer. Civil Engineering. v.8, no.3. March, 1938. p.162-165. Urges importance of comprehensive study to assemble data essential for promoting better administration of federal public works, and also calls attention to number of significant facts.



### Rainfall and Runoff.

Size and shape of control plots for run-off studies. By A.E. Brandt.  
Soil Conservation. v.3, no.8. February, 1938. p.209-210.

### Reclamation.

Desert land Act since 1891. By John T. Ganoe. Agricultural History.  
v.11, no.4. October, 1937. p.266-277.

### Refrigeration.

Automatic controls: Results obtained from their modern applications.  
By W.E. Zieber. Ice & Refrigeration. v.94, no.3. March, 1938.  
p.207-210. Practical engineer must understand and use to advantage,  
the application of automatic controls, to be able to recognize and  
correct defective performance.

Bulb storage by refrigeration. Rural Electrification and Electro-  
Farming. v.13, no.152. January, 1938. p.134-135. Growth and  
flowers controlled to suit market conditions and prices.

New quick freezing machinery. By Richard H. Coffin. Ice & Refriger-  
ation. v.94, no.3. March, 1938. p.217-219. Smith individual  
quick freezing machine, in operation at the Alabama State Docks Cold  
Storage and Fruit Terminal, Mobile, Ala. Production of individual  
frozen articles.

### Refrigerator Lockers.

Boom in building for community cold storage lockers. American Builder  
and Building Age. v.60, no.2. February, 1938. p.50-51.

Fresh roastin' ears in November. By E.W. McMunn. Ohio Farmer.  
v.181, no.1. January 1, 1938. p.6. Discussion of local cold  
storage.

### Research.

Field research offers significant new findings. By G.W. Musgrave.  
Soil Conservation. v.3, no.8. February, 1938. p.210-214.

Recent achievements of the section of climatic and physiographic  
research. By C.W. Thornthwaite. Soil Conservation. v.3, no.8.  
February, 1938. p.226-229.

Reports of Research Committees, as prepared for the 1938 Annual  
Meeting of the Society. By Special Committee on Hydraulic Research.  
Civil Engineering. v.8, no.3. March, 1938. p.194-196.

Research in soil conservation. By W.C. Lowdermilk. Soil Conserva-  
tion. v.3, no.8. February, 1938. p.204-208.

### Reservoirs.

Preliminary notes on reservoir studies in the Great Plains States. By Mark P. Connaughton. Soil Conservation, v.3, no.8. February, 1938. p.232-234. Tables gives summary of data on reservoir sedimentation in the Great Plains States..

### Shelterbelts.

Shelterbelts for windblown soils. By F.B. Trenk. Madison, Wisconsin, 1938. 8p. University of Wisconsin. Agricultural extension service. Circular 287.

### Soils.

Dynamic properties of soil. By F.A. Kummer and M.L. Nichols. Agricultural Engineering. v.19, no.2. February, 1938. p.73-78. VII. A study of the nature of physics forces governing the adhesion between soil and metal surfaces.

### Statistics.

Preparation of statistical tables; a handbook. Washington, D.C., U.S. Department of agriculture. Bureau of agricultural economics. 35p. Mimeographed.

### Storage of Fruits and Vegetables.

Fruits and vegetables: Studies relating to their freezing and storage. By H.H. Plagge. Ice & Refrigeration. v.94, no.3. March, 1938. p.220-223. Review of the literature on freezing and storage of fruits and vegetables, considered from viewpoint of application to cold storage locker plants.

Storage temperature studies with Irish Cobbler seed potatoes. By R.A. Jehle and E.A. Walker. American Potato Journal. v.14, no.12. December, 1937. p.394-410.

### Surveying.

Definitions of surveying terms. Committee of the surveying and mapping division on definition of surveying terms, adopted July 12, 1936. New York, American society of civil engineers, 1938. 22p. Manuals of engineering practice - no.15.

### Tennessee Valley Authority.

Annual report of the Tennessee valley authority for the fiscal year ended June 30, 1937. Washington, U.S. Govt. print. office, 1937. 446p.

### Terracing.

Direct graphic solution of terrace outlet channel dimensions. By V.W. Thalmann. Agricultural Engineering. v.19, no.2. February, 1938. p.55-56, 58.



## Terracing. (Cont'd)

Experimental studies in terracing. By Dwight D. Smith. Agricultural Engineering. v.19, no.2. February, 1938. p.63-66. Conclusions:

1. Major soil loss in runoff from terraced land occurs when area is without vegetative protection.
2. Of 5-year average soil loss in runoff of 1.42 tons per acre, 58.7 percent was during corn year, 36.8 percent during oats year, and 4.5 percent during clover with timothy year. (3-year rotation.)
3. Of 5-year average runoff of 5.2 in. from average annual rainfall of 30.5 in. 50-2 percent was during corn year, 35-9 percent during oats year, and 13.9 percent during clover with timothy year.
4. Soil loss in runoff, and runoff, is nearly always high for corn, low for clover with timothy, and high or low for oats, depending upon season.
5. Two rains in 5-year period accounted for nearly half of total soil loss in runoff.
6. Vertical interval of 5 feet is desirable for 7 percent slope on normal Shelby loam.
7. Vertical interval of 8 feet is desirable for 13 percent slope on normal Shelby loam.
8. Terrace grades above 4 to 6 in. fall per 100 feet are undesirable from erosion standpoint.
9. Terrace grades below 2 in. fall per 100 feet are undesirable due to ponds in channels.
10. Variable grade of 2-4 in. fall per 100 feet is desirable for general condition of Shelby loam region.
11. Soil loss in runoff was 56 percent and runoff 80 percent for contoured corn as compared with check-rowed corn on terraces.
12. Five-year average annual maintenance on 8.5 miles of terraces has been 5.9 man hours and 2.8 tractor hours per mile.
13. Plowing terraces uphill with two-way plow increased their height 57 percent.
14. Disking, harrowing and planting to corn reduced terrace height 23 percent from height after plowing.
15. Terraces materially reduced peak rate of runoff during erosive storms on small cultivated watersheds.
16. Terraces increase surface detention during excessive runoff periods.

Plow that builds contour furrows. By Xzin McNeal. Agricultural Engineering. v. 19, no.2. February, 1938. p.57-58. Contour furrowing plow to meet following requirements. 1. Disturb least possible area of soil. 2. Make ridge capable of impounding water from average rain. 3. Keep sod topside up, with no subsoil exposed. 4. By reversible, to save time and lower cost of making furrows. 5. Have draft light enough so that it could be pulled by two-plow tractor.

Terracing as easy as plowing. By W.A. Steele. Better Farm Equipment and Methods. v.10, no.7. March, 1938. p. 10-11.

## Tires.

Liquid in tractor tires adds to efficiency. Dakota Farmer. v.58, no.1. January 1, 1938. p.4.

Traction of pneumatic tires: S.A.E. Cooperative Tractor Tire Testing Committee. S.A.E. Journal. v.42, no.1. January, 1938.

Tires. (Cont'd)

p.13-26. Cooperative tractor tire tests described in paper were discussed originally at meeting of Society several years ago. Tractor engineers present at discussion suggested to tire engineers that there was need for cooperative test program to determine efficiency of various tires sizes over range of soil conditions. Among ten conclusions drawn from comprehensive tests reported in paper are that the most important factor affecting coefficient of traction or tire thrust of rubber-tired tractors is the nature or surface of operating soil; that for given soil, most important factor is weight that tire carries; and that inflation pressure has relatively small effect.

Tractors.

New tractor designed for small acreage farms. Better Farm Equipment and Methods. v.10, no.5. January, 1938. p.14-17. Low price offers serious threat to horse population - immense potential market.

R.A.S.E. tractor test results. Implement and Machinery Review. v.63, no.752. December 1, 1937. p.794-798, 800.

Tractor costs ... then and now. By Fred Hawthorn. Farm Journal. v.62, no.1. January, 1938. p.20, 55. Table gives operating costs per hour - three plow tractors. Figures for 1919 model and 1937 model compared.

Tractor sales break all records. Better Farm Equipment and Methods. v.10, no.7. March, 1938. p.6. Census of 1937 tractor, combine and grain thresher production and sales.

Tractor test pilot. By Ernest Wilson. Country Home Magazine. v.62, no.2. February, 1938. p.17, 34.

Tractors for specialty crop farms. Northwest Farm Equipment Journal. v.51, no.12. December, 1937. p.48.

Tractors in Russia. Farm Implement News. v.58, no.26. December 30, 1937. p.27. Number of tractors in use on Soviet farms in 1928 was 26,700, in 1932 125,300, and in 1936 380,000. Aggregate horsepower available increased from 278,000 Hp. in 1928 to 6,527,000 Hp. in 1936. Planned expansion of tractor production during next five-year program is expected to increase number of tractors to million. Tractor production in Russia in 1936, totalled 97,000 units, 29,000 of which were track-type. This was an increase of only 3.7 percent over 1935. Soviet government's third five-year plan to start in 1938 calls for production of 120,000 track-type tractors a year, 40,000 of which are due to be Diesel powered.

Two tractors are better than one. Better Farm Equipment and Methods. v.10, no.5. January, 1938. p.24-25.



### Tractors. (Cont'd)

Two tractors are better than one. Better Farm Equipment and Methods. v.10, no.5. January, 1938. p.24-25.

Versatility, - the tractor's middle name. By William E. Schuyler. Farm Journal. v.62, no.2. February, 1938. p.15, 65-66.

### Trucks.

Commercial trucking of fruits and vegetables in nine Atlantic coast states. Prepared for the use of Farmers' cooperative associations by Neptune Fogelberg and Herbert W. Mumford, Jr., Washington, D.C. Farm credit administration. Cooperative division, 1937. 60p. Bulletin no.17.

### Tung Oil.

Oiticica and tung oils. By S.O. Sorenson and others. Industrial & Engineering Chemistry. v.30, no.2. February, 1938. p.211, 215. Changes in physical and chemical properties during heat bodying.

### Ventilation.

Dairy barn ventilation. By R.W. Loudon. Electrical Ruralist. v.1, no.7. November, 1937. p.14-15. Electric dairy barn ventilation is efficient, economical and profitable.

Fresh air flows at forty five. By Merrill Norton. Electricity on the Farm. v.10, no.11. November, 1937. p.10-12.

### Walls.

Condensation within walls. By F.B. Rowley, A.B. Algren, and C.E. Lund. Heating, Piping and Air Conditioning. v.10, no.1. January, 1938. p.49-60. Since temperatures of various parts of wall are controlled by type and amount of insulation used and vapor densities in corresponding parts are controlled by vapor barriers used, transmission of heat and vapor through wall must be considered together, and in most cases intelligent combination of insulation and vapor barriers will eliminate any chance of trouble. Fundamental principle often overlooked is that vapor barrier should be placed on warm side and not on cold side of wall. While there is still much research work to be done concerning practical vapor barriers and limiting conditions under which they may be used, results obtained thus far prove practicability of solving problem by applying high vapor resistance materials to inner section and low vapor resistance materials to outer section of wall.

How to build concrete hollow double walls. American Builder and Building Age. v.59, no.11. November, 1937. p.66-67.

Walls. (Cont'd)

Masonry wall resistance to rain penetration. Washington, D.C., 1937. 9p. United States Department of Commerce. National Bureau of Standards. Technical information on building materials for use in the design of low-cost housing. TIBM. Mimeographed.

Research shows how to correct condensation. Domestic Engineering. v.150, no.6. December, 1937. p.64-67, 151. Accumulation of moisture in walls and attics is a major building problem today. Discussed here are methods of prevention.

Waste Products.

Fund to aid search for new farm product uses. Science News Letter. v.33, no.6. February 5, 1938. p.85. Search for industrial uses for farm products will be speeded up through use of \$500,000 grant by Rackham fund to Michigan State College. In addition to researches looking to industrial uses, one special objective of investigation at Michigan State College will be to make (if possible out of cornstalks, sawdust, straw, or other farm wastes) some material to be plowed into soil for its physical improvement, as fertilizers are used for its chemical improvement. The sought-for material, by rendering the soil lighter and more porous, will increase its water-holding power, and thus indirectly make for better control of both floods and erosion.

Plastic made of soybean offers use for farm products. Science News Letter. v.33, no.5. January 29, 1938. p.71.

Stopping waste in farm surpluses; how the Federal surplus commodities corporation serves the welfare of producers and consumers. Washington, U.S. Govt. print. off., 1938. 10p. U.S. Department of agriculture. Agricultural adjustment administration. Marketing information series. M-1-2.

Water Control Districts.

Statute for river development. Engineering News-Record. v.120, no.23. January 6, 1938. p.13-14. As a means of developing rivers for greatest total value, a federal law permitting the formation of interstate water control districts is proposed. Extract of address of Arthur E. Morgan before Interstate Commission on the Delaware River Basin, in Philadelphia, December 10, 1937, in which he outlined a procedure for unified control of interstate rivers.

Water Heating.

Automatic electric storage water heater. By M.R. Norton. C.R.E.A. News Letter. No.16. November, 1937. p.29-30. Gives cross-section diagram of new design automatic electric storage water heater.



### Water Heating(Cont'd)

Automatic gas-fired, storage type water heaters. By J.M. Krappe. Lafayette, Indiana, 1937. 72p. Purdue University. Engineering experiment station. Research series no.58.

Care-free stock tank heater. By Hobart Beresford. Electricity on the Farm. v.11, no.2. February, 1938. p.15, 30.

Sunshine water heaters. By Frazier Rogers. Gainesville, Florida, 1938. 8p. University of Florida. Agricultural extension service. Bulletin 93.

Water heating. Electrical Review. v.121, no.3124. October 8, 1937. p.479-481. Broad view of recent advance of domestic electrical water heating shows that with many important and more technical and constructional developments of past few years, a stabilizing factor has been steady progress in modifying established design to meet better the convenience of consumer. From this angle outstanding move of today is reduction of wall projections, and this has led to introduction of rectangular water heaters. On score of strength, cylindrical design obviously wins, at any rate from point of view of easy manufacture, and because of this "flat" design has been confined to non-pressure equipment and convenience to consumer has not been confined merely to reduced projection from wall. In its shape lies utility value of table equipment.

### Water Power.

New Upper Salmon Falls hydroelectric development. Power Plant Engineering. v.42, no.2. February, 1938. p.100-104. 18,000-kw. hydroelectric development of the Idaho Power Co., just completed is this company's sixth development on the Snake River in Idaho.

Uhl River water power undertaking. Indian Engineering. v.102, no.2. August, 1937. p.71-75. Punjab hydro-electric project.

Use of hydro shows steady growth. By C.J. Mickler. The Bulletin. (Hydro-Electric Power Commission of Ontario) v.24, no.9. September, 1937. p.269-279. Consumption and revenue of domestic, commercial and rural services among hydro consumers for 1936 compared with former years.

Water power resources of Canada. The Bulletin. (Hydro-Electric Power Commission of Ontario) v.24, no.9. September, 1937. p.296-299. Presents summarization of data and brief discussion of progress in development and utilization of developed and undeveloped water power resources of Canada.

### Water Purification.

Report on stream pollution. Bismarck, N.Dak., North Dakota State Department of Health, Division of Sanitary Engineering and North Dakota State planning board, 1937. 67p. Mimeographed.



Water Supply.

Change in ground water levels in North Dakota. By Howard Simpson.  
Grand Forks, N.Dak., 1937. 23p. North Dakota Geological survey.  
Bulletin 10.

Comparative rates of water loss from soil, turf and water surfaces.  
By F.A. Welton and J.D. Wilson. Bimonthly bulletin, Ohio Agricultural  
Experiment Station. v.23, no.190. January-February, 1938. p.13-16.  
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free water surface, bare soil, the same soil types covered with grow-  
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Contributions to underground water supplies. By Harry F. Blaney.  
California Cultivator. v.84, no.22. October 23, 1937. p.713; 729.

Contributions to underground water supplies. By Harry F. Blaney.  
California Cultivator. v.84, no.23. November 6, 1937. p.754.

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Preliminary survey of the water resources of New York. By Edwin S.  
Cullings. Albany, N.Y., State of New York, Division of state planning.  
1937. 20p. Mimeographed.

Spreading water for storage underground. By A.T. Michelson and Dean  
C. Muckel. Washington, D.C., 1937. 20p. United States Department  
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Summary report of a plan of water conservation for North Dakota.  
Bismarck, N.Dak., North Dakota state planning board. 1937. v.1, 4,5.  
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Missouri river and minor tributaries drainage basin. v.5. Slope area  
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Surface in North Dakota: A record of stream flow 1882 - 1937. Bismarck,  
N.Dak., North Dakota state planning board. 1937. 284p. Mimeographed.

Water record of the year. By John C. Hoyt. Engineering News-Record.  
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currence of the preceding year's drought destruction in the Great Plains.

Water Supply, Rural

Colourless, odourless liquid. Rural Electrification & Electro-farming.  
v.13, no.148. September, 1937. p.28-29. Rural water supply a  
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### Water Supply, Rural

Good water for the farm pump. By R.A. Jennings. Electricity on Farm. v.11, no.2. February, 1938. p.10-11, 31-32. Good and bad features of springs, wells, and cisterns as sources of water supply.

Helpful facts about farm water systems. Better Farm Equipment and Methods. v.10, no.6. February, 1938. p.6-7. Dependability and low operating costs increase their popularity in rural areas.

Watering hens in winter. By L.E. Weaver. American Agriculturist v.134, no.25. December 4, 1937. p.15. Gives cross section of non-freezing farm hydrant.

### Weeds.

Menacing morning glory. Reclamation Era. v.28, no.2. February, 1938. p.32, 34.

War on weeds in Indiana. Extension Service Review. v.9, no.2. February, 1938. p.29. Three methods of eradicating Canada thistle were recommended; namely, spraying with sodium chlorate, persistent cultivation, or the use of alfalfa as a smother crop.

Weeds, real scourge of American farmers. Dakota Farmer. v.57, no.23. November 6, 1937. p.582. "War on weeds" is being waged with aid and cooperation of several Federal Government Bureaus using weed control weapons such as education, research and employment programs directed toward destroying noxious plants.

Worse than a mortgage. By M.N. Beeler. Capper's Farmer. v.48, no.11. November, 1937. p.8-9, 62. Discussion of war on weeds.

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Pressure pipe observations at Panjnad weir. By Ajudhia Nath Khosla. Simla, India, Central Board of Irrigation, 1933. Punjab engineering congress 1933. Paper no.162. 88p.

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Windmills. (Cont'd)

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